

REMARKS

Appreciation is expressed for the Examiner's reconsideration and withdrawal of the finality of the rejection made in the previous Office Action dated May 31, 2005, the withdrawal of the rejection of claim 24 under 35 USC 112, second paragraph, and the rejections of claims 1-2, 5, 7, 9, 11, 17-19, 22-23, 28-29, and 31-33 under 35 USC 103(a) over US Patent 6,723,670 to Kajander et al.

Applicant's invention, as recited by present claims 1-7, 9, 11-23, 25-29, and 31-33, relates to a nonwoven, fibrous mat comprising a blend of a major portion of chopped glass fibers and a minor portion composed of glass or mineral fine staple fibers, and a gypsum board faced with such a mat. In various embodiments, the gypsum board exhibits a combination of desirable structural and functional features that render it fire resistant and easily painted or otherwise given an aesthetically pleasing finish after installation with a minimum of surface preparation required. The mat has a high permeability, permitting easy extraction of excess water ordinarily present during slurry-based manufacture of gypsum or other hydraulic set board.

Claims 1-7, 12-15, 18, 29, and 33 stand rejected under 35 USC 102(b) as being anticipated by US Patent 5,389,716 to Graves, which discloses a binder composition for

fibrous mats that is said to be fire resistant when cured. The mats are said to be suitable for a backing layer for gypsum.

The Examiner has referred to paragraph 5 of the Office Action of May 31, 2005, wherein claims 1-7, 12-15, 18, 24, 29, and 33 were rejected under 35 USC 102(b) as being anticipated by Graves, as providing details for the present rejection. In turn, paragraph 5 of the May 31, 2005 rejection referred to a rejection in the Office Action dated March 8, 2005. Applicant infers that reference to the February 3, 2005 Office Action was intended. A review of the file history indicates that no office action was issued bearing the March 8 date, which in fact was the date of applicant's response to the February 3 Office Action.

In addition, claim 17 has now been newly included in the novelty rejection over Graves.

With respect to claim 17, the Examiner has alleged that facer materials such as the one described by Graves are traditionally applied to both sides of a gypsum board. The Examiner has equated the mat disclosed by Graves with the first and second facers recited by applicant's claims.

Applicant respectfully but emphatically maintains that Graves falls far short of the specificity of disclosure that would be required to properly ground a *prima facie* anticipation of claims 1-7, 12-15, 17, 18, 29, and 33. Absent disclosure that every feature recited by a claim is disclosed by a single reference, either explicitly or implicitly, such a rejection is impermissible, as the Federal Circuit has repeatedly held. See, e.g., in the context of chemical arts, *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 51 USPQ2d 1943 (Fed. Cir.

1999). ["To anticipate a patent claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently...When a patent claims a chemical composition in terms of ranges of elements, any single prior art reference that falls within each of the ranges anticipates the claim; a single prior art species within the patent's claimed genus reads on the generic claim and anticipates. *Id.* at 1346.]

It is established law that a reference that describes subject matter delineated by a numerical range of composition does not *per se* anticipate a claim delineating a different range merely because of the overlap of such ranges. While the existence of a prior art species falling within a claimed generic range has been held to anticipate the claimed genus, in the present instance no species of Graves has been identified that falls within the claimed ranges. Absent such an identified species, a case-specific factual analysis is required to establish possible anticipation. *Ex parte Cole*, 2001 WL 1918535 (BPAI, 2001), quoting *Ex parte Lee*, 31 USPQ2d 1105, 1107 (BPAI, 1993). Explaining the nature of the factual analysis, the Board of Patent Appeals and Interferences required a determination of the specificity of disclosure. ["Where, as here, a reference describes a class of compositions, the reference must be analyzed to determine whether it describes a composition(s) with sufficient specificity to constitute an anticipation under the statute. *Ex parte Lee*, supra, at 1106-1107, emphasis added, citing *In re Schaumann*, 572 F.2d 312, 197 USPQ 5 (CCPA 1978).]

In the present instance, the Examiner has alleged that "Graves teaches each and every limitation." Applicant respectfully but emphatically disagrees. Clearly, the particular range

limitations of applicant's claims are nowhere to be found in Graves. Moreover, the Examiner's analysis fails even to address how present claim 1, which delineates a non-woven fibrous mat characterized by far more specific and narrow ranges than any mat generally or specifically disclosed or suggested by Graves, rises to the level of specificity required to constitute anticipation under *Lee*. In pertinent part of the Office Action of February 3, 2005, the Examiner has pointed to Graves as follows:

"As to claims 1, 29, and 33, Graves teaches that the fibrous mat can comprise a binder composition and a mixture of glass and mineral fibers (col. 4, lines 44-50). The fibrous mat comprises mineral wool fibers having a diameter between 2 and 6 microns (col. 9, lines 50-60) which may be in part substituted with glass fibers (col. 11, lines 33-37) having a diameter between 3 and 30 microns (col. 10, lines 15-25). The glass fibers may be chopped glass fiber strands having a length between 1 mm and 75 mm (col. 10, lines 15-25). The Examiner equates the glass fibers to Applicant's 'chopped continuous glass fibers' and the mineral wool fibers to Applicant's 'fine staple fibers.' The weight ratio of the wool fibers to the glass fibers may range from 0:1 to 1:0 (col. 11, lines 54-60) and the binder comprises 3-40% by weight of the mat (col. 4, lines 34-40)." (Office Action of February 3, 2005, paragraph 11, page 9)

Applicant respectfully maintains that the admitted disclosure of Graves differs strikingly from the subject matter recited by applicant's claims 1, 29, and 33, as set forth in the Table below:

Claim Feature	Instant Application	Graves
chopped glass fiber average diameter	8-17 μm	3-30 μm
fine staple fiber average diameter	< 5.5 μm	2-6 μm
proportion of fine staple fibers	1-30%	0-100%

Clearly, Graves does not expressly recite any of applicant's numerical ranges, instead teaching ranges that are far broader with respect to each of these indicia. Significantly, the Examiner has stated that "Therefore, in one embodiment, the mineral wool fibers can comprise a portion of 1-30 percent of the mat meeting Applicant's requirement." Office Action of February 3, 2005, Page 9. However, there is no citation to suggest that 1-30 percent is any embodiment disclosed by Graves. The 1-30% range does not appear whatsoever in Graves. Neither does the Examiner provide any objective basis on which it could be concluded that species within the range delineated by Graves but outside the claimed ranges would inherently share the same properties. Whereas applicant's mat must contain a blend of fibers of different average diameters, the Graves mat can contain exclusively fibers of one of the types, or any intermediate blend in any proportion. It is thus submitted that a demonstration of aforementioned specificity required under *Lee* is lacking, rendering any finding of anticipation improper.

In particular, applicant maintains that Graves fails to disclose every feature delineated by independent claims 1, 29, and 33. Even less does Graves disclose every feature of claims 2-7, 12-15, 17, and 18, which depend from claim 1, and are submitted to be novel for at least the same reasons as claim 1.

While Graves admittedly discloses certain fibrous mats and the use of fibrous mats as backing for gypsum boards, the disclosure falls far short of the specificity required to predicate anticipation of the gypsum board recited by claims 1 and 29 and the hydraulic set board of claim 33, let alone the preferred gypsum board of claims 2-7, 12-15, and 18.

Furthermore, Graves' preferred and more preferred ranges for ratio of wool fibers to glass fibers (1:1 to 9:1 and 7:3 to 9:1, respectively – see col. 11, lines 58-59) require at least half (1:1) and more preferably a substantial preponderance of the smaller wool fibers (i.e. 70-90%), whereas applicant calls for a “minor portion” of the smaller staple fibers. Applicant respectfully notes that the six species provided by Table 1 accord with Graves' express preference, employing a wool fiber to glass fiber ratio of 90/10 or 80/20, said amounts of wool fiber (80-90%) being far larger than the 1-30 percent delineated by claims 1, 29, and 33. It is submitted that these preferred ratios undermine any allegation that Graves provides the requisite “sufficient specificity” for anticipation of applicant's claimed range.

Moreover, applicant submits that surprising and unexpected results delineated by the instant specification even further rebut any purported conclusion that Graves provides the requisite level of specificity of disclosure. [“If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with ‘sufficient specificity’ to constitute an anticipation of the claims. The unexpected results may also render the claims unobvious.” MPEP 2131.03 (II).]

In particular, it is submitted that Graves fails even to recognize the particular properties of applicant's claimed mat that render it advantageous for use as a gypsum board facer, including: (i) a high permeability that permits extraction of water during board

fabrication without also causing excessive intrusion of the gypsum slurry into and through the facer (page 8, lines 23-25); (ii) a smooth surface of the mat with a surprisingly low content of fine staple fiber (page 9, lines 11-14); and (iii) a smooth surface of the final board product that surprisingly is not well correlated with the smoothness of the mat before board fabrication (page 20, lines 5-7). This beneficial combination of properties arises from the use of mat employing particular fibers having the sizes and relative amounts delineated by applicant's claims. However, the Examiner has not pointed to any disclosure or suggestion of such unexpected benefits in Graves, let alone a disclosure having sufficient specificity to permit a person of ordinary skill even to recognize the subject matter of claims 1-7, 12-15, 17, 18, 29, and 33, let alone construct the recited mat using the particular types and amounts of fibers recited. It is respectfully submitted that a person of ordinary skill in possession of Graves would not have any basis on which to select the particular non-woven mat used as the facer of applicant's gypsum board, nor any reasonable expectation of success in obtaining the beneficial properties provided thereby.

Accordingly, it is further maintained that the showing of improved results that were surprising and unexpected at the time of the invention, specifically the comparison afforded by Example 6 of the specification (page 19, line 15 and following) between gypsum board made with known mat facers (Comparative Example 1) and applicant's boards made with the facers as delineated by claims 1, 29, and 33 (e.g., Examples 3 and 5 set forth in Tables III and IV), provides objective evidence of the non-obviousness of the presently claimed board. As set forth at page 20, lines 5-7, the smoothness of dry cured mat surprisingly and

unexpectedly is not indicative of the smoothness of finished board. As a result, it is submitted that Graves' disclosure at col. 12, lines 14-21 regarding the relatively coarser or softer hand of finished mat would incorrectly guide a person of ordinary skill seeking a gypsum or hydraulic set board, and would not motivate the selection, from the vast range of possible fiber combinations disclosed by Graves, of the mat used to face applicant's construction board. It is respectfully submitted that these results fully suffice to establish the novelty and non-obviousness of applicant's claimed subject matter. ("[W]hen an applicant demonstrates substantially improved results, as Soni did here, and states that the results were unexpected, this should suffice to establish unexpected results in the absence of evidence to the contrary." *In re Soni*, 54 F.3d 746, 751, 34 USPQ 2d 1684, 1687-88 (Fed. Cir. 1995).) Applicant respectfully submits that the conditions of *Soni* have been satisfied in the present instance and that the Examiner has failed to provide objective evidence otherwise, as would be required to rebut the presumption that applicant's recited improvement was indeed surprising and unexpected.

For at least these reasons, it is submitted that Graves does not disclose or suggest a gypsum or other hydraulic set board having the outstanding combination of structural and functional properties afforded by the gypsum board recited by present claims 1-7, 12-15, 18, and 29, and the hydraulic set board of claim 33.

Accordingly, reconsideration of the rejection of Claims 1-7, 12-15, 18, 24, 29, and 33 under 35 U.S.C. 102(b) as being anticipated by Graves is respectfully requested.

Claims 28 and 32 were rejected under 35 USC 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as being obvious over Graves.

As set forth hereinabove in connection with the 35 USC 102(b) rejection of Claims 1-7, 12-15, 18, 24, 29, and 33, applicant maintains that Graves fails to disclose or suggest every feature of claim 1, from which claim 28 depends. Independent claim 32 recites the same fiber dimensions and proportions as claim 1, which dimensions and proportions are also submitted not to be disclosed or suggested by Graves for the same reasons. In addition, claims 28 and 32 recite additional features, namely flame resistance and air permeability, respectively. Such limitations are clearly not disclosed or suggested by Graves.

Accordingly, reconsideration of the rejection of claims 28 and 32 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Graves is respectfully requested.

Claim 16 was rejected under 35 USC 103(a) as being unpatentable over Graves in view of US Patent 6,365,533 to Horner, Jr., et al., which relates to a low fiber, plyable facer suitable for use in insulation board manufacture.

Applicant respectfully disagrees with the Examiner's position that Graves teaches the invention recited by claim 16, except for disclosure of a second face comprising kraft paper, as set forth hereinabove in connection with the 102(b) rejection of claims 1-7, 12-15, 17-18, 24, 29, and 33 over Graves. It is respectfully maintained that Horner, Jr., et al. does not cure the aforementioned deficiencies of Graves to render obvious the invention of claim 16.

For these reasons, and those set forth above, it is submitted that the combination of Graves and Horner, Jr., et al. does not disclose or suggest the gypsum board recited by present claim 16.

Accordingly, reconsideration of the rejection of claim 16 under 35 U.S.C. 103(a) as being obvious over the combination of Graves and Horner, Jr., et al. is respectfully requested.

Claim 26 was rejected under 35 USC 103(a) as being unpatentable over Graves in view of US Patent Publication US 2004/0209071 to Carbo et al., which discloses acoustical tiles, also known as acoustical panels, ceiling tiles, or ceiling panels, that are said to inhibit the growth of fungus, bacterial and other micro-organism.

The Examiner has indicated that the details of the rejection can be found in paragraph 7 of the Office Action dated May 31, 2005. In the cited passage, the Examiner asserted that Jaffee teaches the claimed invention but fails to teach that the core further comprises a biocide. Applicant again presumes that the reference to Jaffee is a typographical error. In order to advance prosecution, the rejection will be addressed as if Graves were intended. However, it is respectfully submitted that the rejection as it stands is improper and incomplete, there being no positive recitation of the manner in which Graves (rather than Jaffee) is applied to claim 26, as is required by MPEP 706.02(j), sections (A) – (D), and 37 CFR 1.104 (c)(2).

Applicant respectfully disagrees that [Graves] teaches the claimed invention except for a biocide contained in the core, for at least the reasons set forth hereinabove in connection with the 102(b) rejection of claims 1-7, 12-15, 17-18, 24, 29, and 33 over Graves. Applicant further maintains that Carbo et al. fails to cure the lack of disclosure or suggestion of a gypsum board employing the nonwoven mat facers delineated by claim 1, from which claim 26 depends.

As a result, it is submitted that a combination of [Graves] and Carbo et al. does not disclose or suggest a gypsum board having the outstanding combination of properties afforded by the board recited by present claim 26.

Accordingly, reconsideration of the rejection of claim 26 under 35 U.S.C. 103(a) as being obvious over the combination of Graves and Carbo et al. is respectfully requested.

Claims 25 and 27 were rejected under 35 USC 103(a) as being unpatentable over Graves in view of US Patent 4,647,496 to Lehnert et al., which provides an exterior finishing system for a building, such as a fibrous mat-faced gypsum board having a water resistant, set gypsum core.

Applicant respectfully disagrees with the Examiner's position that Graves teaches the invention recited by claims 25 and 27, except for disclosure of a gypsum core comprising at least one water repellant agent as required by claim 25 and reinforcing fiber as required by claim 27. More specifically, for the reasons set forth hereinabove in connection with the 102(b) rejection of claims 1-7, 12-15, 17-18, 24, 29, and 33, applicant respectfully submits

that Graves fails to disclose or suggest the non-woven fibrous mat facer required for the gypsum board of claim 1, on which claims 25 and 27 depend. Moreover, Lehnert et al. does not contain any disclosure or suggestion of the particular facer delineated by claim 1, and so fails to cure the deficiency of Graves. Applicant thus submits that even in combination, Graves and Lehnert et al. do not disclose or suggest the gypsum board delineated by claims 25 and 27.

Accordingly, reconsideration of the rejection of claims 25 and 27 under 35 U.S.C. 103(a) as being obvious over the combination of Graves and Lehnert et al. is respectfully requested.

Claims 1-7, 9, 11-14, 17-18, 23, 28-29, and 32-33 were rejected under 35 USC 103(a) as being unpatentable over US Patent 5,837,621 to Kajander in view of US Patent 4,637,951 to Gill.

Kajander discloses a fire resistant glass fiber mat. The fibers are coated with at least one nitrogen containing compound and at least one boron-containing compound and dried. A binder in the coating is cured. The resulting fibers are sheathed with a refractory material that protects the fibers and allows them to maintain integrity to higher temperatures and/or for longer times than untreated fibers.

The Examiner has pointed to col. 7, lines 10-25, which discloses glass fibers having diameters in the range of 3 to 20 microns and length up to about 3 inches (lines 27-28). In addition, the Examiner has cited Kajander's statement that fibers of different lengths and

diameters can be used to get different characteristics in a known manner. (lines 26-27, emphasis added). However, the Examiner has not provided any substantiation that the aforementioned "known manner" encompasses the characteristics afforded by the mat and gypsum board of applicant's claims. Applicant respectfully submits that the Kajander disclosure falls short of disclosing or suggesting any embodiments having the characteristics of applicant's facer and board, and does not provide any basis on which it could be concluded that one of ordinary skill would recognize such characteristics are known, or even that there was a reasonable expectation such characteristics would be attained by any facer suggested by Kajander.

Admitting that Kajander fails to teach the particular fiber combination delineated by claim 1, viz. "a blend of a major portion composed of chopped glass fibers having an average fiber diameter ranging from about 8 to 17 μm and a minor portion composed of fine staple fibers having an average fiber diameter of less than about 5.5 μm , said minor portion being composed of glass or mineral fibers and comprising about 1-30 percent of the dry weight of the web", the Examiner has further cited Gill.

Gill is directed to a fibrous mat facer with improved strikethrough resistance. The mat is said to be especially suited as a carrier, substrate, or facer for various curable materials that are place on one surface of the mat while in a liquid state. Gill et al. further discloses a laminate comprising the foregoing mat and a vinyl plastisol coating or a coating of a foam insulation material such as a polyurethane or polyisocyanurate foam.

Conspicuously absent from the Gill et al. disclosure is any reference to gypsum or other cementitious construction board.

Applicant respectfully traverses the Examiner's alleged motivation for the modification of Gill required to satisfy the requirements of the instant claims. In particular, the Examiner has pointed to col. 3, lines 24-26, as suggesting the use of the present blend of fibers, alleging that a person of ordinary skill in the art would be motivated to use such a blend to create a mat having a non-abrasive and irritating hand. Applicant respectfully submits that hindsight reconstruction is being employed. The context of col. 3, lines 24-26, clearly relates to the limits of 8 and 25 micron fiber diameters. In particular, it is maintained that "The coarser fibers" of lines 24-25 cannot relate to microfibers in the blend, which are not described until the paragraph following the statement (i.e., the paragraph at lines 27-58). Moreover, the cited statement elucidates the basis on which the upper limit of 25 microns is set, which relates to the "hand or feel of the final mat material" (line 24). Gill et al. clearly regards mat incorporating fibers having a 25 micron diameter as being sufficiently free of any feel that is of abrasive or irritating. Moreover, there is no indication in the recited passage that the hand and feel of the mat relate to the microfiber content.

On the other hand, the Examiner has extrapolated Gill et al.'s specific teaching to assert a motivation to form a mat containing much smaller chopped glass fibers (i.e., fibers having a diameter of at most 17 microns), in combination with specified microfibers. It is respectfully submitted that the Examiner's assertion goes far beyond the scope of what a person having ordinary skill in the art would understand from the Gill et al. disclosure.

More specifically, applicant maintains that the Examiner's apparent association of the effects of microfibers on the properties of finished mat and board, which Gill et al. does not address, must be regarded as impermissible hindsight reconstruction possible only in light of applicant's own teaching.

Furthermore, applicant respectfully points to the test data of Example 6, in which smoothness of gypsum board made with blended glass fiber mats of Examples 3 and 5, in accordance with the invention, is compared to the smoothness of board made with a mat comprising only chopped glass fibers, i.e. the mat of Comparative Example 1. Significantly, the mat of Comparative Example 1 is made with glass fibers having an average diameter of 13 microns, about half the upper diameter limit regarded as providing mat regarded by Gill et al. as producing mat with acceptably low abrasiveness and irritation. As delineated at page 20, lines 1-5, it is surprising and unexpected that despite the low diameter of the Comparative Example 1 fiber, significant improvement is still exhibited by boards employing the blended-fiber mats of Example 3 and 5, even though the base fibers used therein are only marginally smaller (i.e. 11 micron) than the Example 1 mat with 13 micron fiber. Moreover, the data of Example 6 also show the surprising and unexpected result that the smoothness of the mat prior to incorporation in gypsum board is not predictive of the properties of the finished board. See, e.g., page 20, lines 5-7.

The Examiner further relies on *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), contending that applicant's selection of the particular mat formulation recited represents merely the discovery of an optimized value of a result-effective variable.

Applicant disagrees, and submits that the reliance on *Boesch* is misplaced. It is submitted that the Examiner has not identified any disclosure or suggestion that the alleged result effect variable in fact has the effect of producing smooth board. As set forth above, Gill's disclosure pertains only to large diameter fiber (i.e. fiber of greater than 25 micron diameter), whereas applicant's mat employs a major portion of a fiber that is 8-17 microns in diameter. There is a conspicuous absence of any recognition that the amount of microfiber present is any result-effective variable, as required for *Boesch* to be applicable. To the contrary, applicant points to the Federal Circuit's holding in *In re Chu*, 36 USPQ 2d 1089, 1095 (Fed. Cir. 1995), that technical evidence relating to the frailty of fabric filters during pulse-jet cleaning clearly countered the assertion that placement of the catalyst in the baghouse was merely a "design choice." Specifically, the Court held that Chu's evidence regarding the violent "snapping" action during pulse-jet cleaning, the difficulty in stitching compartments including the capacity to withstand high temperatures, and problems encountered from variable path lengths due to settling of the catalyst particles in each compartment militated against a conclusion that placement of the SCR catalyst was merely a "design choice." In the present instance, applicant maintains that smoothness, even in light of Kajander and Gill et al., is clearly a result; not a design choice that the skilled worker can readily "dial up" on command. See also *In re Gal*, 980 F.2d 717, 25 USPQ2d 1076 (Fed. Cir. 1992) wherein a finding of "obvious design choice" was precluded where the claimed structure and the function it performed were different from the prior art.) In the present instance, Gill et al. requires a hold-out additive/resin binder combination that is effective to

prevent wetting and penetration of porous mat by a settable fluid substance (col. 4, lines 35-39). On the other hand, the presence of such a combination in applicant's gypsum mat would be incompatible with the bonding that is required between the mat and the adjacent gypsum core.

Accordingly, applicant respectfully requests that the rejection of 1-7, 9, 11-14, 17-18, 23, 28-29, and 32-33 under 35 USC 103(a) as being unpatentable over Kajander in view of Gill be withdrawn.

Claim 16 was rejected under 35 USC 103(a) as being unpatentable over Kajander in view of Gill and further in view of Horner

The Examiner has indicated that Kajander in view of Gill et al. teaches the invention recited by claim 16, except for disclosure of a second face comprising kraft paper. For the reasons set forth hereinabove in connection with the 102(b) rejection of claims 1-7, 9, 11-14, 17-18, 23, 28-29, and 32-33 over Kajander in view of Gill et al., applicant disagrees. It is respectfully maintained that Horner, Jr., et al. does not cure the aforementioned deficiencies of Kajander in view of Gill et al. to render obvious the invention of claim 16.

For these reasons, and those set forth above, it is submitted that the combination of Kajander, Gill et al., and Horner, Jr., et al. does not disclose or suggest the gypsum board recited by present claim 16.

Accordingly, applicant respectfully requests that the rejection of claim 16 under 35 USC 103(a) as being unpatentable over Kajander in view of Gill et al. and further in view of Horner be withdrawn.

Claim 26 was rejected under 35 USC 103(a) as being unpatentable over Kajander in view of Gill et al. and further in view of Carbo et al.

The Examiner has asserted that Kajander in view of Gill teaches the claimed invention but fails to teach that the core further comprises a biocide.

Applicant respectfully disagrees for the reasons set forth above in connection with the rejection of claims 1-7, 9, 11-14, 17-18, 23, 28-29, and 32-33 under 35 USC 103(a) as being obvious over Kajander and Gill. Inasmuch as claim 26 depends from claim 1, it is submitted that claim 26 is also patentable for at least the same reasons.

Accordingly, applicant respectfully requests that the rejection of claim 26 under 35 USC 103(a) as being unpatentable over Kajander in view of Gill et al. and further in view of Carbo et al. be withdrawn.

Claims 25 and 27 were rejected under 35 USC 103(a) as being unpatentable over Kajander in view of Gill et al. and further in view of Lehnert et al.

Applicant respectfully disagrees with the Examiner's position that the combination of Kajander and Gill teaches the invention recited by claims 25 and 27, except for disclosure of a gypsum core comprising at least one water repellant agent as required by claim 25 and

reinforcing fiber as required by claim 27. More specifically, for the reasons set forth hereinabove in connection with the 103(a) rejection of claims 1-7, 9, 11-14, 17-18, 23, 28-29, and 32-33, applicant respectfully submits that even in combination, Kajander and Gill fail to disclose or suggest the non-woven fibrous mat facer required for the gypsum board of claim 1, on which claims 25 and 27 depend. Neither does Lehnert et al. contains any disclosure or suggestion of the particular facer delineated by claim 1, and so fails to cure the deficiency of Kajander and Gill. Applicant thus submits that even in combination, Kajander, Gill, and Lehnert et al. do not disclose or suggest the gypsum board delineated by claims 25 and 27.

Accordingly, reconsideration of the rejection of claims 25 and 27 under 35 U.S.C. 103(a) as being obvious over the combination of Kajander, Gill, and Lehnert et al. is respectfully requested.

Claims 1-7, 9, 11-14, 18-23, 28-29, and 31-33 were rejected under 35 USC 103(a) as being unpatentable over US Patent 6,187,697 to Jaffee et al. in view of US Patent 4,637,951 to Gill.

Jaffee et al. is directed to fibrous nonwoven multiple layer mats having at least two layers with a body portion layer and a surface portion layer having fine fibers and/or particles therein, both layers being bonded together and to each other with a same resin binder. Preferably most or essentially all of the particles and/or fibers in the surface layer are larger than openings between the fibers in the body portion of the mat. The Examiner

has particularly pointed to disclosure of fibers at least 0.25 inches long. In addition, it is said that mixtures of fibers of different lengths and/or fiber diameters can be used (col. 5, lines 34-35). While the use of fibrous nonwoven mats as facers for gypsum board is disclosed generally by Jaffee et al. at col. 1, lines 34-36, there is a conspicuous absence of any disclosure or suggestion that the inventive mat be so used. Rather, the only board-like products with which the mat's use is suggested are combustible materials, such as the various wood-based products delineated at col. 9, lines 35-38 and recited by claims 6 and 7. In marked contrast to the single-layer mat used in applicant's claimed gypsum board, the Jaffee et al. mat is a two-layer mat, including both a glass fiber body layer and a surface layer comprising fibers and/or particles. The Examiner has not pointed to any disclosure or suggestion in the Jaffee et al. reference that the particular types of fibers recited be used in any single layer type of mat. Applicant respectfully submits that even in combination with Gill et al., as the Examiner has proposed, there is no teaching that would lead a person having ordinary skill to effect the substantial reconstruction of the Jaffee et al. mat, including the elimination of the required surface layer, to form the mat or gypsum board faced therewith that are recited by present claims 1-7, 9, 11-14, 18-23, 28-29, and 31-33. It is respectfully submitted that the need for such substantial reconstruction is strong evidence that the present mat and gypsum board are not obvious over the references applied. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). In addition, Jaffee et al. articulates the long-felt need for a smooth surfaced mat, as set forth at col. 2, line 14. However, Jaffee et al. clearly addresses the surface issue in an altogether different way, i.e. by provision of a

surface layer differentiated in structure and composition from the glass fiber matrix of the bulk layer. Accordingly, no disclosure or suggestion could be drawn from Jaffee et al. that would predict the problem of a smooth surface could be reasonably expected to result from applicant's choice of mat composition.

Recognizing that Jaffee fails to teach the particular combination of chopped glass fibers and fine staple fibers recited by applicant's claims, the Examiner has again pointed to Gill et al., and maintains that it would be obvious to use the claimed mixture of fibers allegedly disclosed by Gill et al. in the mat of Jaffee to create a facer with improved strikethrough and skin irritation problems.

Applicant respectfully traverses this motivation. As set forth hereinabove in connection with the combination of Gill with Kajander, it is submitted that the motivation articulated evidences impermissible hindsight reconstruction, because Gill et al.'s discussion of skin irritation is directed only to fibers having diameter greater than 25 microns, and so is not pertinent to the chopped fibers of applicant's mat, which have diameter of 8-17 microns. Even less does Gill et al. recognize any role of microfibers in regard to skin irritation.

Moreover, the improved strikethrough resistance cited by the Examiner would motivate a person having ordinary skill in the art to avoid the proposed combination. In the production of gypsum board, the gypsum is initially deposited onto the facer in the form of an aqueous slurry with a substantial excess of water. It is essential that the facers have sufficient permeability to permit that excess water to be extracted through the facer. On the other hand, Gill et al. is directed to mat said to be suitable for polyurethane and

polyisocyanurate insulating foam materials, for which waterproofing is a key performance criterion. One of ordinary skill in the art would recognize that a low permeability is desired for such an application. Significantly, Gill et al. teach air permeability, as measured by the Frazier Air Permeability Test, as being a criterion for distinguishing the effective amount of microfiber to be employed. Col. 5, lines 23-26. In particular, the Gill et al. Examples delineate Frazier Air Permeability Test results of 180 cubic feet/min (col. 5, line 59) and 220 cubic feet/min (col. 6, lines 4-5). Claims 2, 3, 10, and 12 recite preferred mats and laminates wherein the air permeability is either no more than about 225 cubic feet/min or between about 40 and 225 cubic feet/min. The recitation of an upper limit for air permeability further reinforces the Gill et al. teaching that lower permeabilities are desired. Applicant, on the other hand, recites mats that include preferred embodiments wherein the air permeability is at least about 250 cubic feet/minute, and more preferably at least 300 cubic feet/minute (see e.g. page 8, lines 23-25; page 17, lines 9-23; Table IV; and claim 32.) As a result, applicant would be led away from the proposed combination.

However it is submitted that, even if proper, the combination of Jaffee with Gill et al. would not disclose or suggest applicant's mat and gypsum board. In particular, the Examiner has failed to point to any disclosure or suggestion in Gill et al. that would motivate a person of ordinary skill in the art to construct a mat lacking the surface layer required by Jaffee, which is not present in applicant's mat. Significantly, it is the surface layer of the Jaffee mat that is responsible for the character of the hand and surface roughness

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of the Jaffee mat, not the particular fiber combination chosen; this obviates the very motivation for the combination on which the Examiner relies.

Accordingly, applicant respectfully requests that the rejection of 1-7, 9, 11-14, 18-23, 28-29, and 31-33 under 35 USC 103(a) as being unpatentable over Jaffee et al. in view of Gill be withdrawn.

In view of the foregoing remarks, it is respectfully submitted that the present application has been placed in allowable condition. Reconsideration of the rejection of claims 1-7, 9, 11-23, 25-29, and 31-33 and allowance of the present application are, therefore, earnestly solicited.

Respectfully submitted,

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